

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
<b>TerreStar Networks, Inc.</b>	)	File No. SAT-MOD-20070608-00080
	)	
Request for Milestone Extension	)	Call Sign: S2633

**MEMORANDUM OPINION AND ORDER**

**Adopted: October 3, 2007**

**Released: October 3, 2007**

By the Chief, Satellite Division, International Bureau:

**I. INTRODUCTION**

1. By this Order, we grant the application filed by TerreStar Networks, Inc. (TerreStar) for a ten-month extension of time in which to launch a satellite to provide 2 GHz mobile satellite service (MSS) in the United States.<sup>1</sup> As discussed below, TerreStar has provided sufficient information to the Commission to justify the need for an extension of time to prepare its satellite for launch. Grant of this extension will allow TerreStar to bring into service a state-of-the-art satellite with advanced capabilities to meet homeland security and other service needs.

**II. BACKGROUND**

2. On June 29, 2004, the Commission reinstated the reservation of spectrum that had originally been granted in 2001 to TMI Communications and Company (TMI), TerreStar's predecessor in interest,<sup>2</sup> for provision of 2 GHz MSS in the United States via a new Canadian-licensed satellite.<sup>3</sup> The reinstatement order conditioned the spectrum reservation upon compliance with the following schedule:

<b>Milestone</b>	<b>Deadline</b>
Complete Critical Design Review	November 2004
Begin physical construction of satellite	March 2005
Launch satellite into assigned orbital location	November 2007
Certify entire system operational	November 2008

<sup>1</sup> "2 GHz MSS" refers to MSS operations using frequencies in the 2000-2020 MHz (uplink) and 2180-2200 MHz (downlink) bands for radio links between satellites and mobile earth stations. Amendment to Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, *Third Report and Order, Third Notice of Proposed Rulemaking, and Second Memorandum Opinion and Order*, ET Docket No. 00-258, 18 FCC Rcd (2003).

<sup>2</sup> TMI Communications and Company, Limited Partnership, and TerreStar Networks, *Order*, DA 07-2028 (Int'l Bur. May 10, 2007)(modifying the reservation of 2 GHz spectrum to list TerreStar in lieu of TMI).

<sup>3</sup> TMI Communications and Company, Limited Partnership, *Memorandum Opinion and Order*, 19 FCC Rcd 12603 (2004) ("2004 Reinstatement Order"), reversing TMI Communications and Company, Limited Partnership, *Memorandum Opinion and Order*, 18 FCC Rcd 1725 (Int'l Bur. 2003).

3. TMI certified, on December 6, 2006, that critical design review (CDR) for the satellite had been completed on November 29, 2004, and supported the certification by submitting CDR documents and affidavits.<sup>4</sup> In April 2005, TMI certified that it had commenced physical construction of the satellite. The filing included an affidavit from an officer of Space Systems/Loral (Loral) stating that his company was manufacturing bus electronics and payload assemblies for the satellite with parts valued at \$2.7 million, and that orders had been placed with subcontractors for other components of the satellite with a total cost of \$5.7 million. The officer also confirmed that the construction contract for the satellite remained in full force and effect and that TMI had met all payment obligations to date.<sup>5</sup>

4. On May 29, 2007, TerreStar asked to modify the technical specifications for the satellite.<sup>6</sup> The requested changes, among other things, include a change in satellite orbital location from 107.3° W.L. to 111.1° W.L., and changes to improve the satellite's 2 GHz performance (larger antenna, more spot beams, higher power). TerreStar indicates that the proposed changes will make it possible to provide two-way voice and data services to end users with small and inexpensive terminals,<sup>7</sup> and will enhance its ability to provide priority service to first responders in emergency situations.<sup>8</sup>

5. In the application addressed by this *Order*, TerreStar requests a change in the milestone deadline for launching its satellite, from the end of November 2007 to the end of September 2008.<sup>9</sup> TerreStar does not request any change to the November 2008 deadline for certifying that its system is operational. New ICO Satellite Services G.P. filed comments supporting the milestone extension.<sup>10</sup> Inmarsat Global Limited and Globalstar filed comments opposing the requested extension.<sup>11</sup>

### III. DISCUSSION

6. The Commission imposes milestone deadlines for satellite system implementation in order to ensure that licensees proceed with construction and launch their satellites in a timely manner and that valuable spectrum will not be held to the exclusion of others by those who are unwilling or unable to

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<sup>4</sup> Letter from Gregory C. Staple to Marlene H. Dortch, FCC Secretary, dated Dec. 6, 2004. *See* File No. SAT-LOI-19970926-00161.

<sup>5</sup> Letter to Marlene H. Dortch, FCC Secretary, from Gregory C. Staple, Counsel for TMI Communications and Company, Limited Partnership, dated April 11, 2005. *See* File No. SAT-LOI-19970926-00161.

<sup>6</sup> File No. SAT-MOD-20070529-00075. *See Public Notice*, Report No. SAT-00461 (July 27, 2007).

<sup>7</sup> File No. SAT-MOD-20070529-00075, Narrative at 4.

<sup>8</sup> *Id.* at 5. In addition to the May 29, 2007, modification application, TerreStar recently filed license applications for operation of mobile earth stations (File Nos. SES-LIC-20061206-02100, SES-AMD-20061214-02179, SES-AMD-20070309-00336, and SES-AMD-20070508-00582; *See Public Notice*, Report No. SES-00931 (May 30, 2007)), a U.S. gateway earth station (File No. SES-LIC-20070530-00732; *See Public Notice*, Report No. SES-00935 (June 13, 2007)) and for an ancillary terrestrial component (File No. SES-AMD-20070907-01253). These applications are currently pending, and will be addressed separately.

<sup>9</sup> *See Public Notice*, Report No. SAT-00453 (June 22, 2007).

<sup>10</sup> Comments of New ICO Satellite Services G.P. filed July 23, 2007.

<sup>11</sup> Comments of Inmarsat Global Limited filed July 23, 2007. *Also see* Reply of TerreStar Networks, Inc. filed Aug. 7, 2007; Reply of Inmarsat Global Limited filed Aug. 17, 2007; and letter from William T. Lake, Counsel to Globalstar, Inc., filed on July 23, 2007 (advocating reinstatement of Globalstar's cancelled 2 GHz MSS authorization "in view of the growing uncertainties about the ability of TerreStar and/or ICO to deploy service within the timeframe envisioned by the Commission"). Globalstar's letter contains no new legal arguments, but instead reiterates arguments previously raised in other proceedings. Therefore, the concerns raised in the letter are more appropriately addressed in other proceedings.

proceed.<sup>12</sup> Extensions may be granted when the delay is due to unforeseeable circumstances beyond the applicant's control, or when there are unique and overriding public interest concerns that justify an extension.<sup>13</sup> An applicant must justify the precise extension period requested.<sup>14</sup>

7. TerreStar has demonstrated a substantial and continuing commitment to satellite construction and system implementation.<sup>15</sup> Therefore, it is not necessary to determine whether the manufacturing difficulties that have occurred were a foreseeable outcome of TerreStar's decision to alter its satellite design.<sup>16</sup> We agree with TerreStar that this case differs from those in which applicants have relied on a last-minute design change as an excuse for delay. In contrast to those cases, where the funds needed to commence satellite construction had not been committed, TerreStar's satellite is in the final stages of construction, is almost completely paid for, and is slated for launch pursuant to a launch services agreement under which substantial payments have also been made.<sup>17</sup> TerreStar indicates that, as of the filing date of its application, Loral had installed 84% of the hardware units to the main body of the satellite, completed the payload module level assembly and testing, integrated the payload modules with the main structure, and was proceeding with main body integration. The amount paid thus far constitutes 97% of the total price for on-ground delivery of the completed spacecraft.<sup>18</sup> Further, TerreStar has contracted with Arianespace to launch the satellite and Loral has committed to complete construction of the satellite and ship it to the launch site by August 24, 2008, which will allow for a launch date of September 26, 2008. Moreover, TerreStar has paid 70% of the price for launch under its contract with Arianespace.<sup>19</sup> TerreStar states that it has actively participated in the construction project, and in

<sup>12</sup> NetSat 28 Company, LLC, *Memorandum Opinion and Order*, 19 FCC Rcd 17722 (Int'l Bur. 2004); Amendment of the Commission's Space Station Licensing Rules and Policies, *First Report and Order and Further Notice of Proposed Rulemaking in IB Docket No. 02-34*, 18 FCC Rcd 10760 (2003) at ¶173.

<sup>13</sup> 47 C.F.R. § 25.117(c); Intelsat LLC, *Order and Authorization*, 17 FCC Rcd 2391 (Int'l Bur. 2002).

<sup>14</sup> 47 C.F.R. § 25.117(c).

<sup>15</sup> See *ICO Launch Extension Order* at ¶15 (launch extension granted; satellite construction was 85% complete and 93% of the total price had been paid); WB Holdings 1 LLC, *Memorandum Opinion and Order*, 20 FCC Rcd 10846 (Int'l Bur. 2005) (construction of satellite complete except for final testing); Intelsat LLC, *Memorandum Opinion and Order*, 19 FCC Rcd 5266 (Int'l Bur. 2004) (launch extension granted; satellite construction was 85% complete); Loral SpaceCom Corporation, DIP, *Memorandum Opinion and Order*, 18 FCC Rcd 21851 (Int'l Bur. 2003), (launch extension granted; satellite was approximately 80% complete and 60% funded).

<sup>16</sup> TerreStar asserts that the delays experienced in construction were the result of unforeseeable technical problems encountered in the manufacturing process. Application Exhibit 1 at 7-8. TerreStar states that Loral encountered problems in completing construction of three satellite components: S-band low-noise amplifiers, oscillators, and the S-band feed array. TerreStar states that the subcontractor originally engaged to manufacture the S-band low-noise amplifiers abandoned the task because it could not meet performance specifications. Loral engaged another subcontractor which eventually succeeded in producing the amplifiers, but their delivery was significantly delayed. Loral indicates that the oscillators were redesigned repeatedly in order to meet challenging performance requirements necessitated by the ground based beam forming function, and, consequently, were not delivered on time and are still undergoing qualification testing. Finally, TerreStar asserts that Loral encountered problems with its own design and manufacture of the S-band feed array. In February 2007, Loral informed TerreStar that a critical part had failed high power testing. Inmarsat, on the other hand, argues that the delays appear to be a direct result of TerreStar's decision to modify the satellite to substantially increase the complexity of its design. See Comments of Inmarsat Global Limited at 9. The record shows that these changes to the satellite design were made at or before the November 2004 CDR, and that none of the delays encountered in satellite manufacturing were a result of design changes made after that point.

<sup>17</sup> Application Exhibit 1.

<sup>18</sup> TerreStar's representations concerning construction progress and amounts paid are confirmed by a signed statement from Loral's CEO. Application Exhibit 1, Attachment 1.

<sup>19</sup> Application Exhibit 1 at 2-3.

resolving the concrete manufacturing issues encountered.<sup>20</sup> Finally, TerreStar appears to have a continuing commitment to adhere to the November 2008 deadline for certifying that its system is operational.

8. We disagree with Inmarsat's view that TerreStar has not proceeded diligently.<sup>21</sup> Inmarsat, in effect, claims we should disregard progress based on the fact that TerreStar has constructed a satellite with different technical parameters than those originally proposed. This fact is not determinative of whether an extension should be granted, given the advanced state of satellite construction. The evidence establishes that a bona fide CDR for a 2 GHz MSS satellite was, in fact, performed in November 2004, and that construction of that satellite commenced no later than March 2005. While it would have been desirable for TerreStar to seek approval of its proposed technical changes "well in advance" of CDR,<sup>22</sup> its failure to do so does not alter the facts demonstrating substantial progress.<sup>23</sup>

9. TerreStar has justified the extension period requested. The tasks remaining include: delivery of oscillators and the S-band feeder array; reference performance testing; thermal vacuum testing; integration of antenna reflectors, tower structure and solar arrays; dynamics testing; and final performance testing.<sup>24</sup> According to TerreStar, resolution of the problems associated with the delivery of the oscillators and feed array will entail a six to eight month rework process. Once this process is complete, additional testing will be needed to ensure that these components will meet performance requirements.<sup>25</sup> While TerreStar indicates that it has requested more time than may actually be needed to complete the remaining tasks,<sup>26</sup> we find the request is reasonable.<sup>27</sup> However, we will adopt reporting

<sup>20</sup> TerreStar reports that it has stationed two of its employees on-site at Loral's manufacturing facility and has also engaged two independent engineering consultants to monitor construction and assist Loral in developing technical solutions. TerreStar has also conducted formal progress reviews by senior Loral and Terrestrial management, which, in light of recent difficulties, now take place monthly rather than quarterly. Further, a weekly telephone conference, including senior management of TerreStar and Loral has been established to evaluate status and more quickly focus attention at the highest level on problems that could have an impact on scheduled delivery. TerreStar also reports that some of its personnel have been assigned directly to the Loral's feed array task force and to the oscillator subcontractor's factory to add their expertise, monitor progress, and facilitate quick decisions.

<sup>21</sup> Inmarsat Comments at 5-6 and 11; Reply of Inmarsat Global Limited filed Aug. 17, 2007 at 5-6.

<sup>22</sup> See Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, *Memorandum Opinion and Order*, 15 FCC Rcd 16127, 16179, paragraph 108 (2000); ICO Satellite Services G.P., *Memorandum Opinion and Order*, 20 FCC Rcd 9797, paragraph 26 (Int'l Bur. 2005). By its actions, TerreStar has accepted the risk of any unfavorable Commission action on its May 29, 2007, modification application.

<sup>23</sup> Advanced Communications Corporation, *Memorandum Opinion and Order*, 11 FCC Rcd 3399, 3414 (1995) ("our precedent makes clear that diligent progress toward actual operation ... must be the touchstone for our analysis of whether to grant an extension"), *aff'd sub nom. Advanced Communications Corp. v. FCC*, 84 F.3d 1452 (D.C. Cir. 1996), *cert. denied*, *Advanced Communications Corp. v. FCC*, 519 U.S. 1071 (1997).

<sup>24</sup> Application Exhibit 1, Attachment 1.

<sup>25</sup> Application Exhibit 1 at 4. See also Letter dated May 25, 2007 from C. Patrick DeWitt, Chief Executive Officer, Space Systems Loral, to Robert H. Brumley, President and CEO, TerreStar Networks, included in Application Exhibit 1, Attachment 1.

<sup>26</sup> Application Exhibit 1 at 12 ("[r]ecognizing that any satellite construction schedule has some level of schedule risk, the new schedule ... for satellite delivery includes a contingency margin").

<sup>27</sup> See WB Holdings 1 LLC, *Memorandum Opinion and Order*, 20 FCC Rcd 10846 (Int'l Bur. 2005) (granting one-year launch extension because of delay stemming from contractor's bankruptcy); Loral SpaceCom Corporation, DIP, *Memorandum Opinion and Order*, 18 FCC Rcd 21851 (Int'l Bur. 2003) (sixteen-month extensions for completing construction and launching granted to allow for delay due to technical problems requiring re-design and re-testing of satellite components); GE American Communications, Inc and Alascom, Inc., *Memorandum Opinion, Order and Authorization*, 2000 FCC LEXIS 4812 (2000) (ten-month extension granted in view of need to correct

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conditions to ensure TerreStar notifies the Commission promptly should any further unanticipated and significant delays arise. Given the advanced stage of construction of this innovative satellite, we do not see the need to adopt intermediate milestones in this case, as Inmarsat suggests.<sup>28</sup> At this late stage in the construction process, with few tasks remaining and one year until launch, interim milestones would serve no useful purpose. Reporting conditions will be sufficient to alert us to any problems that may arise, so that any appropriate measures can be taken.

10. Based on the foregoing, we conclude that there are unique and overriding public interest considerations that warrant an extension of time. The satellite is at an advanced stage of construction, and TerreStar is proceeding diligently to address concrete manufacturing problems that have delayed project completion. Postponement of the satellite's launch until September 2008 will not prevent TerreStar from meeting the November 2008 milestone deadline for commencing operation. Grant of an extension will serve the public interest by allowing a spectrum reservation holder that has demonstrated diligence and commitment, in terms of financial, technical, and targeted personnel resources, to expeditiously complete implementation of a satellite system with advanced capabilities for homeland security, rural connectivity, and other critical communications purposes.

#### IV. ORDERING CLAUSES

11. Accordingly, IT IS ORDERED, that TerreStar's Request for Milestone Extension, File No. SAT-MOD-20070608-00080 (Call Sign 2633), is GRANTED, and the reservation of spectrum is modified to reflect the following milestones:

<u>Milestone</u>	<u>Date</u>
Launch Satellite	September 30, 2008
Certify that entire system is operational	November 30, 2008

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anomalies discovered during testing and due to delay in availability of launch vehicle); Earthwatch Incorporated, *Order and Authorization*, 12 FCC Rcd 19556 (Int'l Bur. 1997) (granted two-year launch extension requested because of delays in receiving essential satellite components and establishing launch dates with launch provider); AMSC Subsidiary Corporation, *Order and Authorization*, 10 FCC Rcd 3791 (Sat. Div. 1995) (ten-month extension granted because of unanticipated technical problems with the satellite's L-band antenna).

<sup>28</sup> Compare *ICO Satellite Services G.P., Memorandum Opinion and Order*, 20 FCC Rcd 19696 (Int'l Bur. 2005) (adopting intermediate milestones where applicant proposed a two year construction schedule, and physical construction had not yet begun).

12. IT IS FURTHER ORDERED, that TerreStar shall submit a report to the Chief, Satellite Division, International Bureau, within five business days, in the event that any of the following tasks are not completed by the specified dates:

<u>Task</u>	<u>Date</u>
Reference performance testing	March 31, 2008
Thermal vacuum testing	May 31, 2008

13. This Order is issued pursuant to the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Robert G. Nelson  
Chief, Satellite Division  
International Bureau